
Low Tide Counts of Water Birds at Sabaki River Mouth Malindi, Kenya

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Methodology

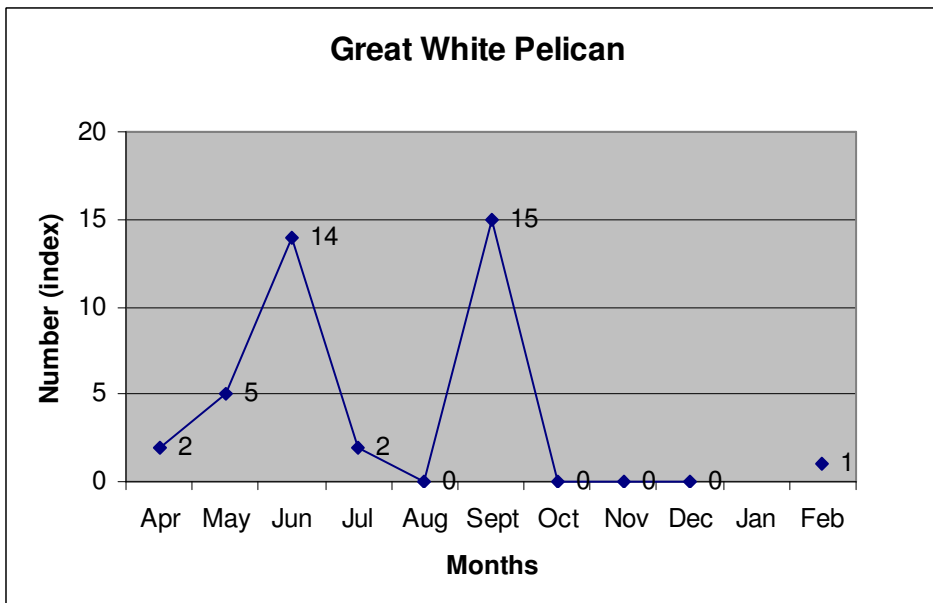
Monthly counts of the birds of the Sabaki River estuary were carried out from April 2004 to February 2005. Counts were carried out over period of 2-3 hours either side of a low tide, with effort being made to do it on a neap or near-neap tide when the area of exposed mud is least and birds are therefore more concentrated making easier counting. The counting was carried out by volunteers and a set route was followed on the northern bank for each survey which took in river bank, mud flats, sand bars and the open beach at the mouth of the river. Birds on the southern bank were generally fewer and it was assumed that by counting the northern bank a significant number of the total present would be counted that would provide sufficient data to obtain trends of numbers and species.

Results

A total of 68 species of birds strictly associated to the mud flats and river (Pelicanidae, Phalacrocoracidae, Ciconiiformes, Phoenicopteriformes, Wildfowl, Accipitriformes, Charadriiformes, Laridae, Sternidae, Kingfishers and allies) were counted. However only 40 species had enough data in order to significantly detect any trends through the year.

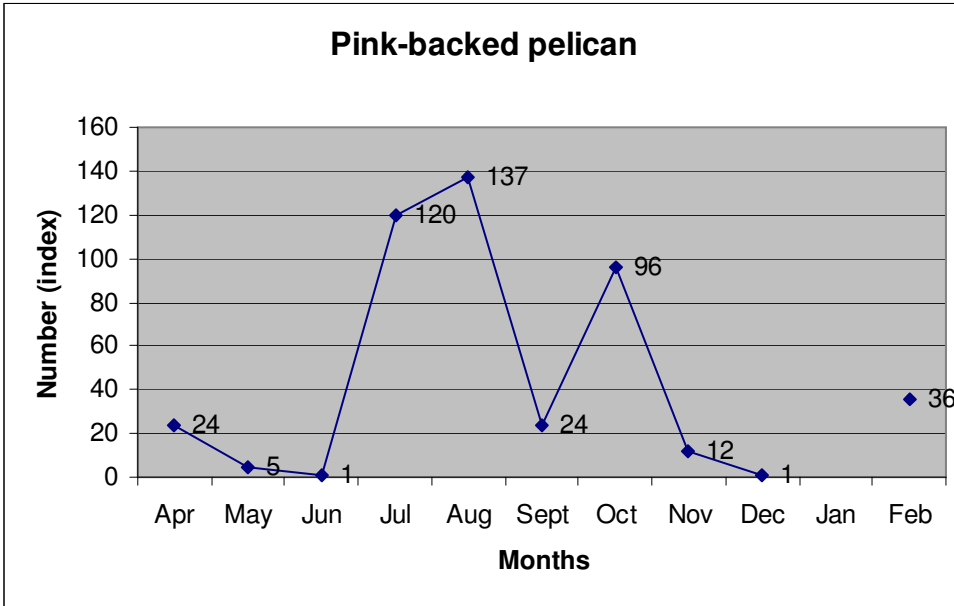
What follows are graphs of numbers for each species with associated comments.

Great White Pelican *Pelecanus onocrotalus*



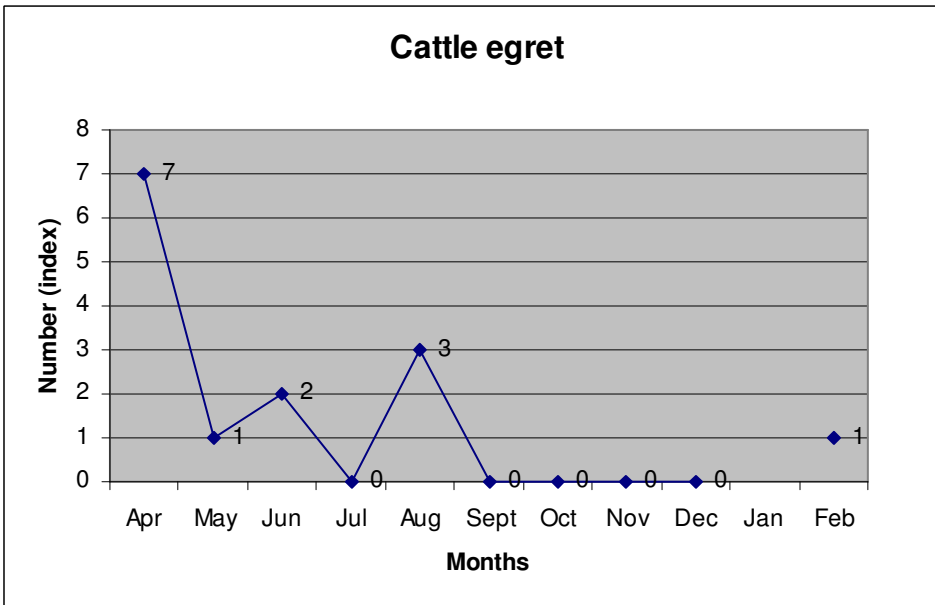
Even if numbers are very low to be really useful to detract good conclusions; it seems very clear that there is a drop of the population from October to January. There is no evident cause of this. In Kenya breeding season is during main rains, peaking in Apr- June, sometimes continuing year round (Brown et al., 1983).

Pink-backed Pelican *Pelecanus rufescens*



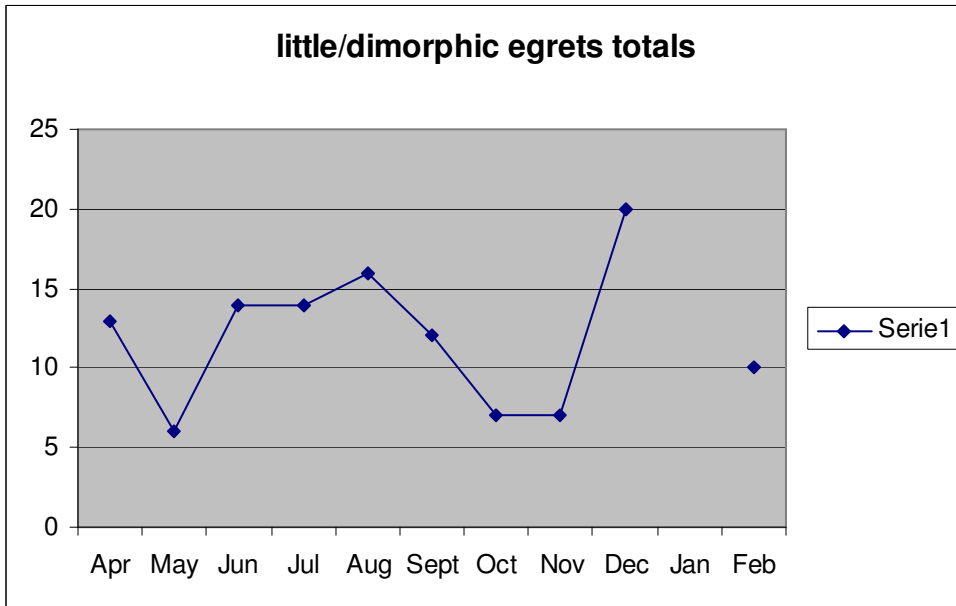
There was no particular trend of the population on the estuary during the year. Further data collection would be necessary to determine any pattern.

Cattle Egret *Bubulcus ibis*



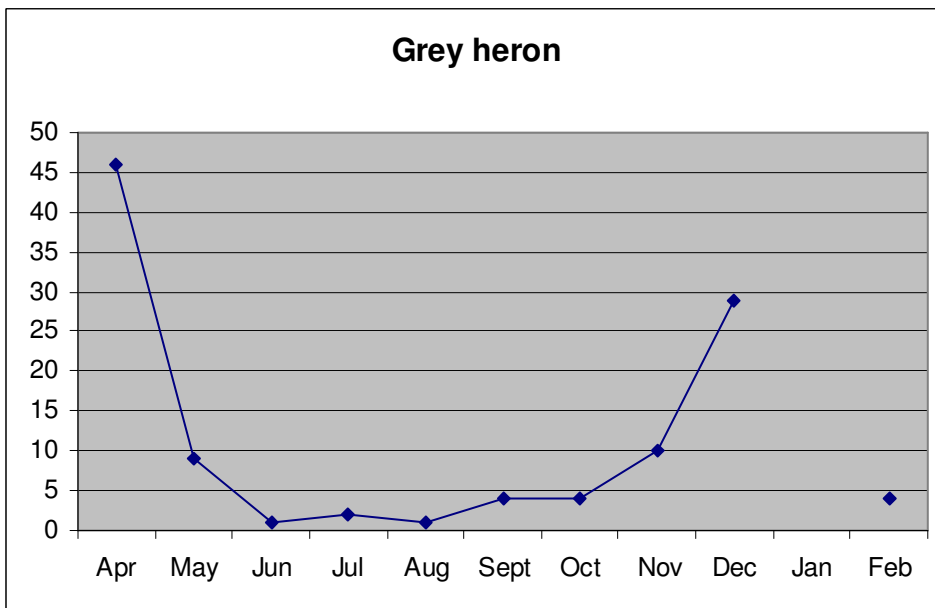
Not a common species on the estuary and therefore numbers are again very low to reach any conclusion. Rising numbers in Apr-May period are also registered by Lewis & Pomeroy, (1989) but it seems difficult to link the total absence of the species from September to January, with a breeding season (Apr, June, Sept-Oct, Dec; Brown, 1983)

Dimorphic Egret *Egretta dimorpha*



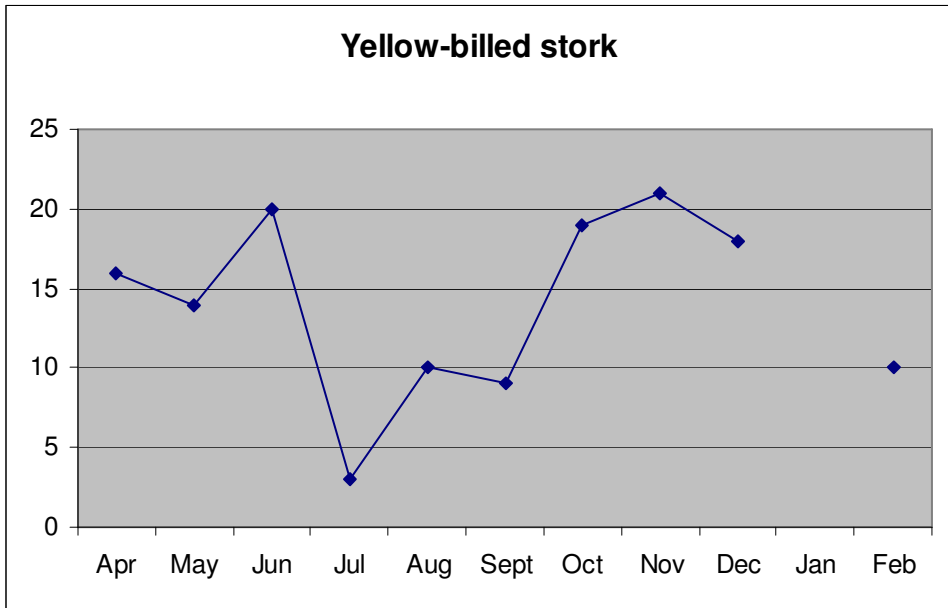
Little and dimorphic egret are very difficult to tell in the field particularly in their white morph. Most of the birds seen at Sabaki are taken to be Dimorphic and this graph is used taking that data. Numbers are very variable and do not seem to have any evident trend.

Grey Heron *Ardea cinerea*



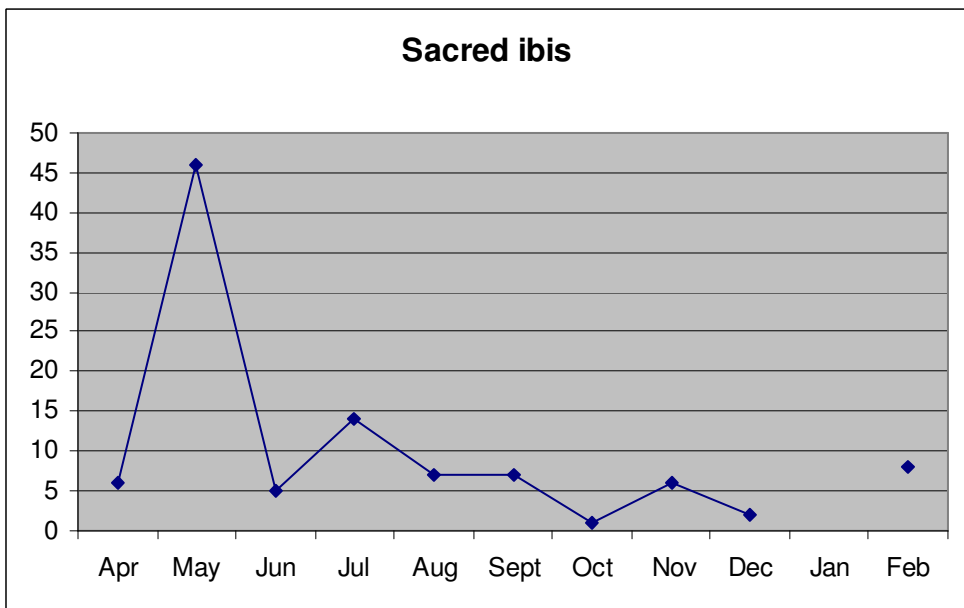
An evident drop in numbers in the Palaearctic summer could suggest that part of the Sabaki Grey Heron population arrives from there, this gives the area a further international relevance even if we are not speaking of a vulnerable species.

Yellow-billed Stork *Mycteria ibis*



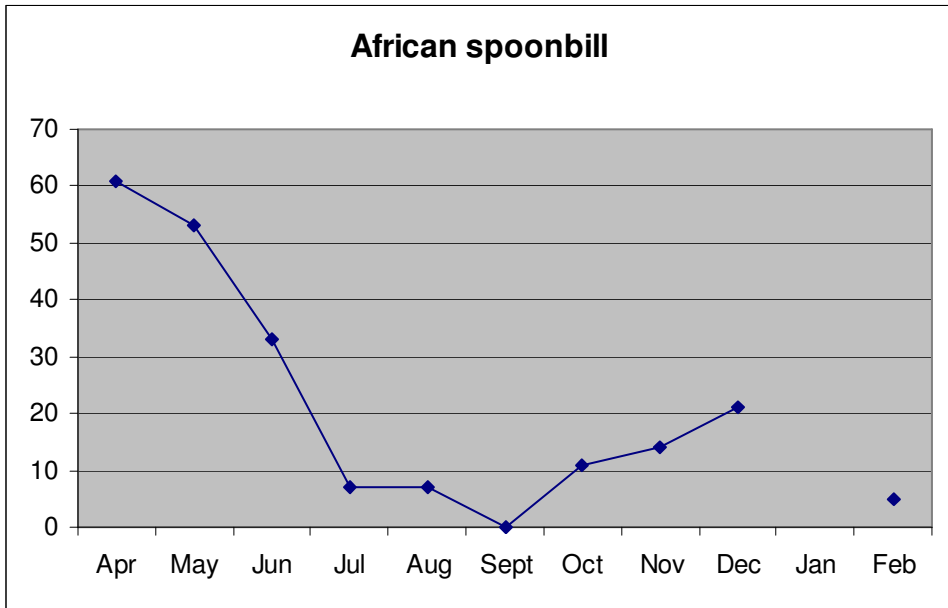
Numbers are very low in July, probably because of causal fluctuation. Breeding season is Mar-June in Kenya (Brown, 1983). Few (3) breeding sites up country.

Sacred Ibis *Threskiornis aethiopicus*



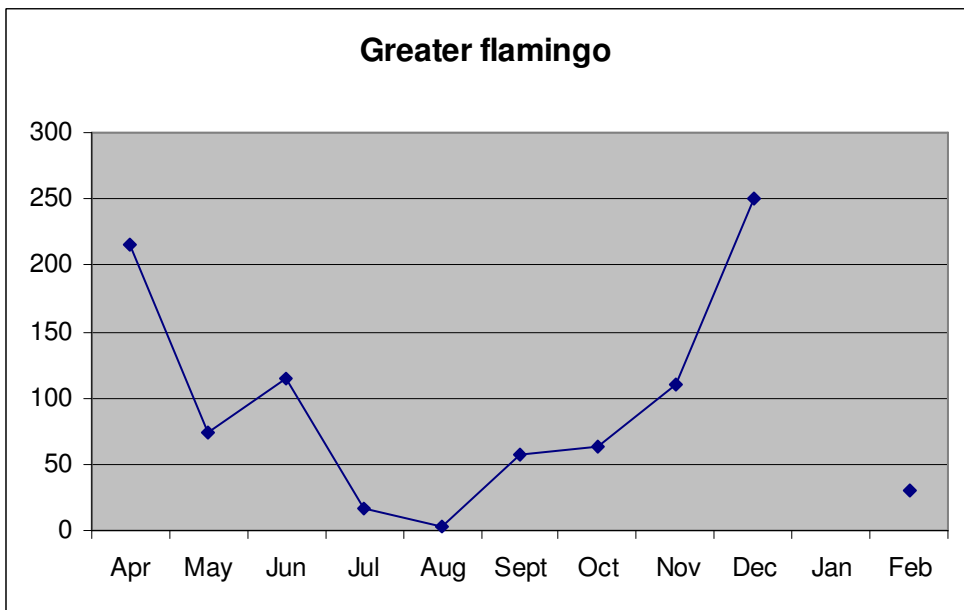
Breeding season is from Jan to June, with peaks in April May, this coincides with our highest numbers; closest breeding site should be Tana River Delta. Even though it is risky to find a correlation between the two things, we could hypothesize that big concentrations of birds in Tana in breeding season tend to spread to near by areas such as Sabaki (around 70 km to the south of the Tana).

African Spoonbill *Platalea alba*



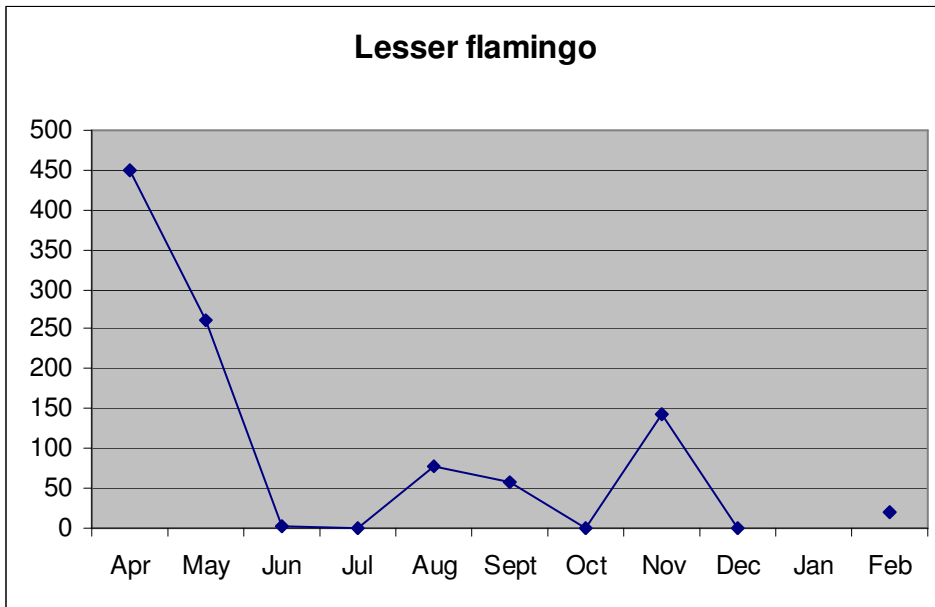
This species seems to be strictly associated with Sacred Ibis (Lewis & Pomeroy, 1989; Brown et al.,1983) in distribution, breeding grounds and breeding season; trends seem to be similar from the two charts, so conclusions for these two species could be the same.

Greater Flamingo *Phoenicopterus ruber*



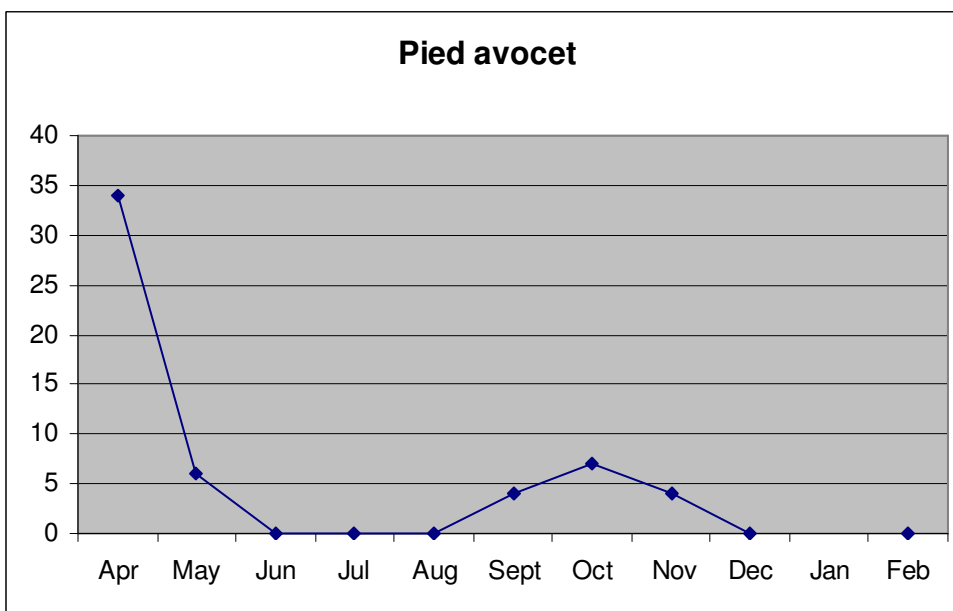
Numbers rise in the northern winter strengthening the hypothesis (Lewis & Pomeroy, 1989) that greater flamingos that occur on Kenyan coast are Palaearctic migrants from the Middle East. Our maximum numbers (250 birds) are much higher than the maximum registered in existing references for the area (50 in Mida Creek, Lewis & Pomeroy, 1989).

Lesser Flamingo *Phoeniconaias minor*



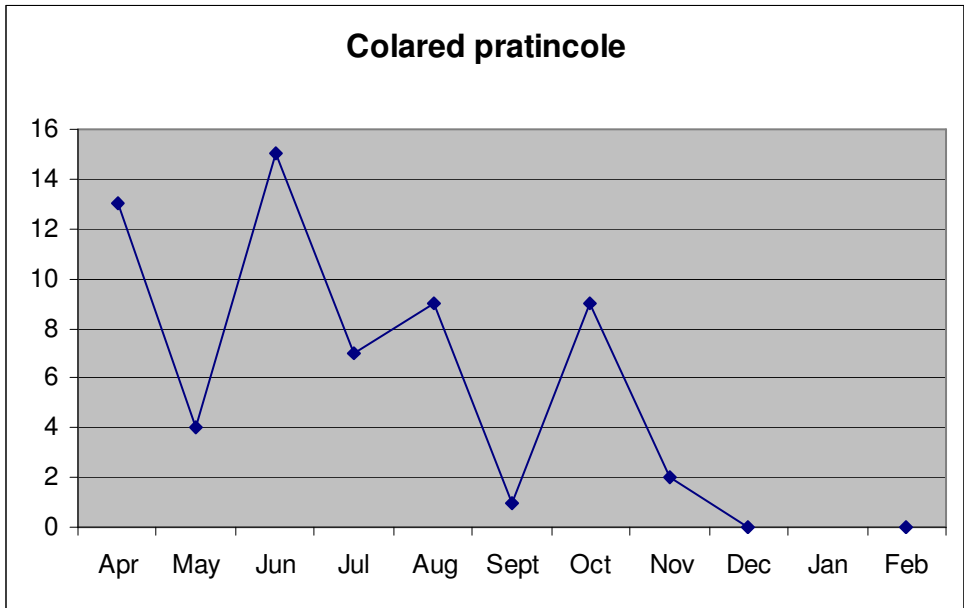
Pomeroy registers that main concentrations of this species occur in the Rift Valley; sightings outside these areas are referred as "rare and often moribund wanderers"; our data instead shows that Sabaki hosts quite a big and regular population, that fluctuates and moves in irregular way as typical of this erratic species. In the late 1990s after the El Nino, counts of up to 3,000 birds were made on the River Mouth and it seems the species has become regular since then.

Pied Avocet *Recurvirostra avosetta*



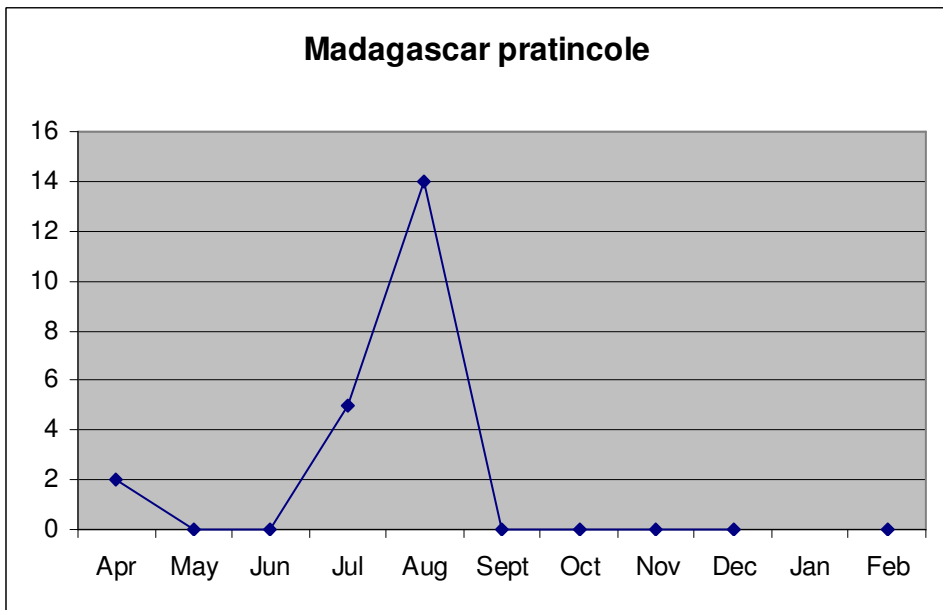
No explanation to this apparent trend but numbers are there again very low to be useful.

Collared Pratincole *Glareola pratincola*



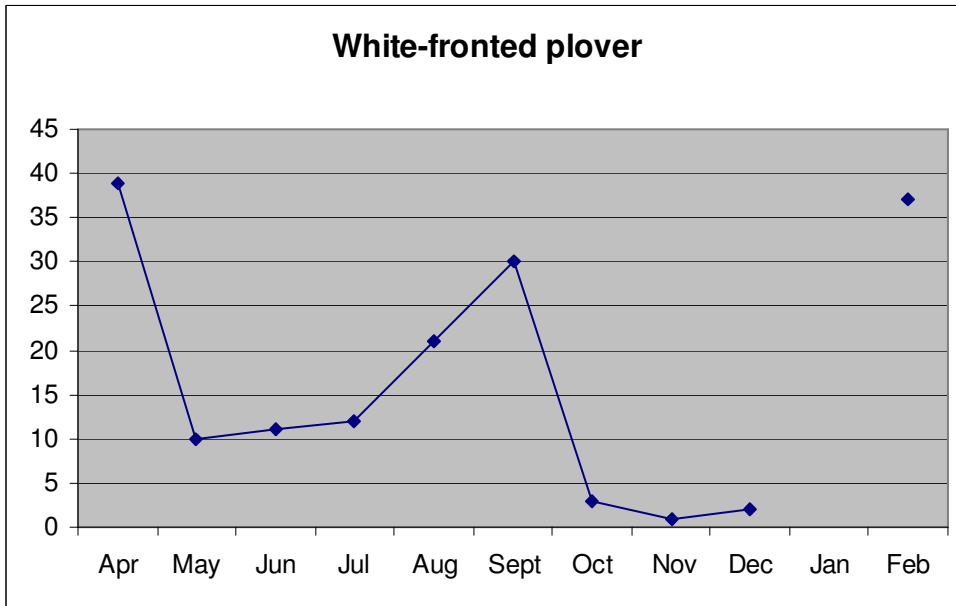
We know now for certain that the species breeds in the area in May / June (Valle, 2005) and can probably consider the species resident with no particular fluctuation trend during the year. Having said that, there would appear to be a distinct drop in numbers during the northern winter for the year observed.

Madagascar Pratincole *Glareola ocularis*



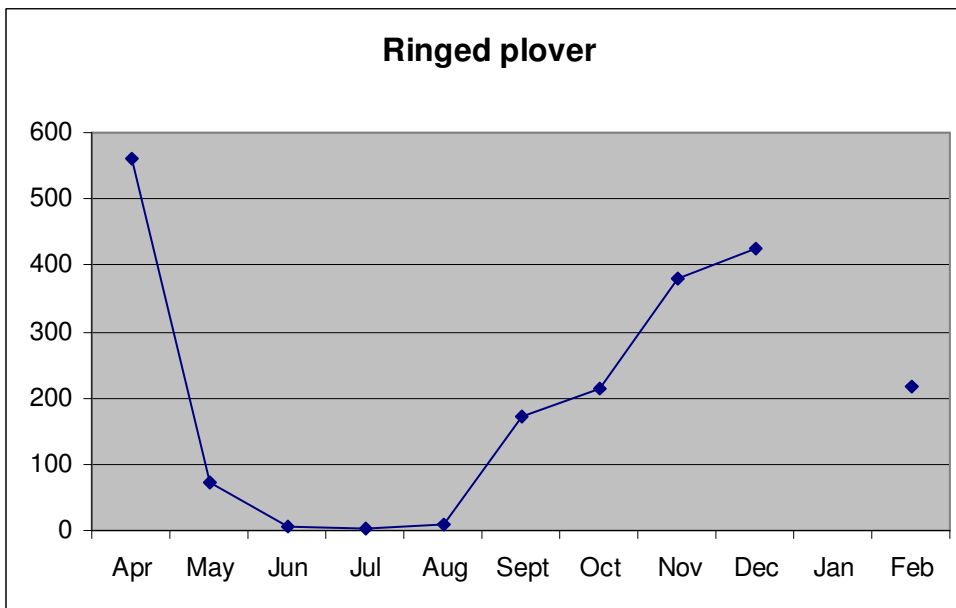
The species is known to pass through Kenya from March to September and the August-September southward passage is particularly marked (Lewis & Pomeroy, 1989). Our data confirms the major importance of the area as a stop over in the migration of this species. Counts of several thousand birds have been made in the past at Sabaki.

White-fronted Plover *Charadrius marginatus*



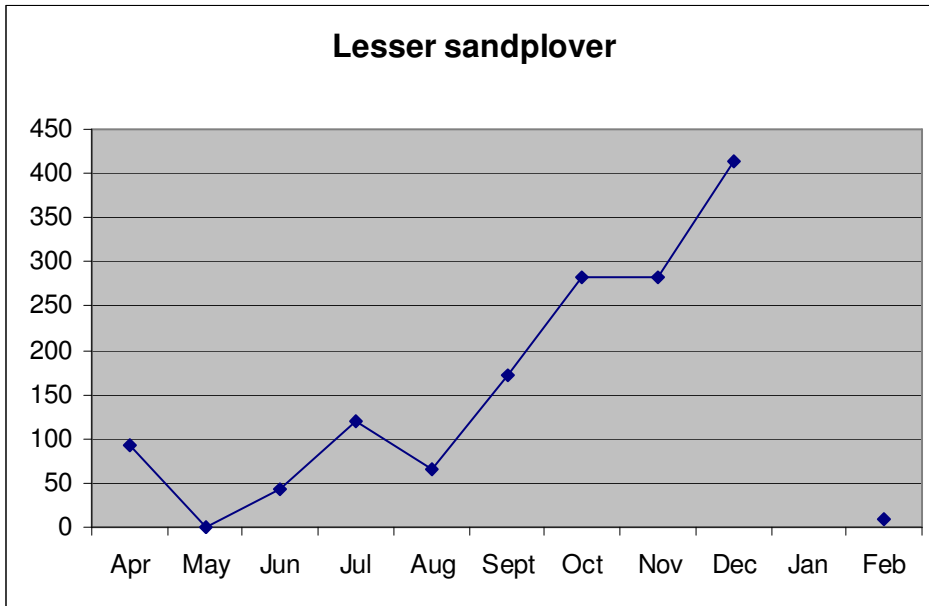
There appears to be a clear peak in numbers Feb-April and a lesser peak in August / September. What this represents is as yet unknown. It is considered a breeding species on the Kenya coast though no nests were found during this study.

Ringed Plover *Charadrius hiaticula*



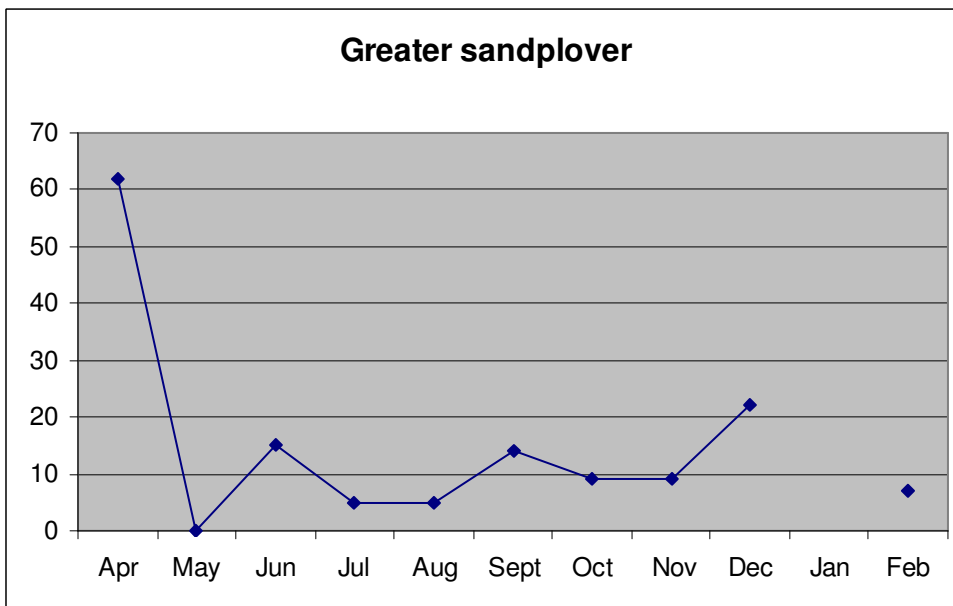
A Palearctic species that is clearly shown by the drop of birds during the northern winter.

Lesser Sandplover *Charadrius mongolus*



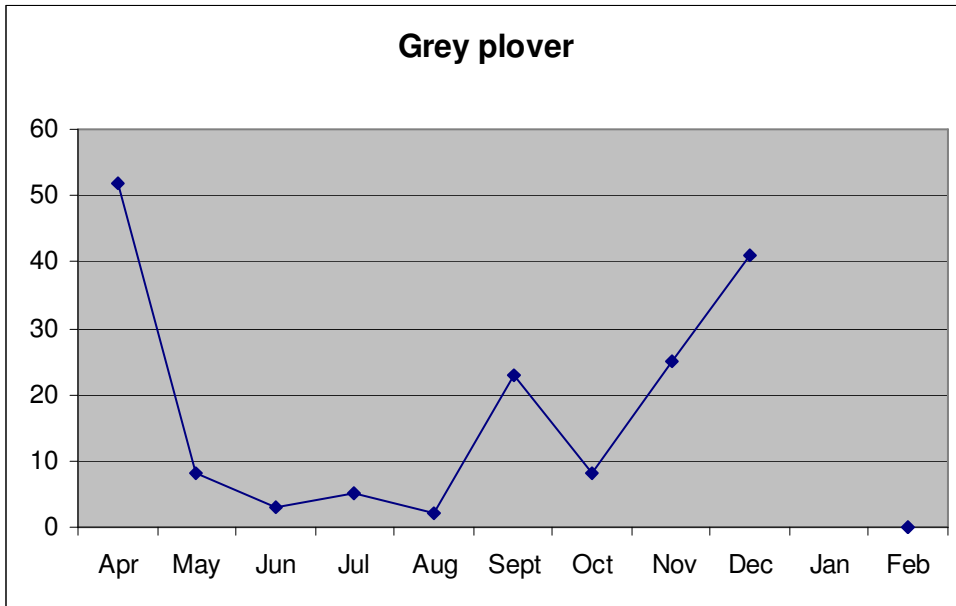
Numbers build up gradually for this species through the northern autumn peaking in December. The very low number in the February count is strange and may be due to local conditions at the time of the count.

Greater Sandplover *Charadrius leschanaultii*



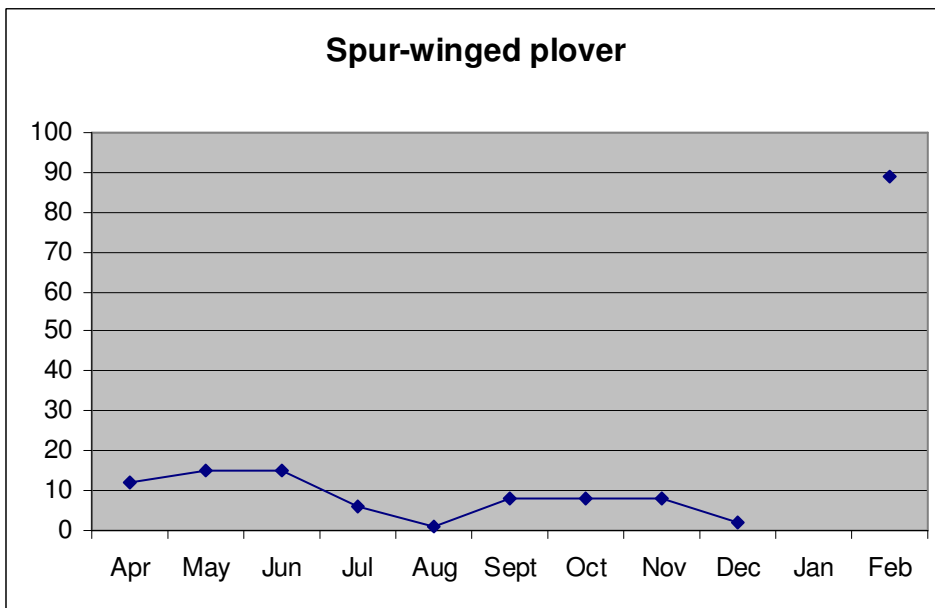
Not as numerous at Sabaki River Mouth as on the beaches or in Mida Creek. This is a species that prefers sand to mud. Numbers appear high in April which may be due to passage of birds moving north and stopping on the estuary to rest and feed.

Grey Plover *Pluvialis squatarola*



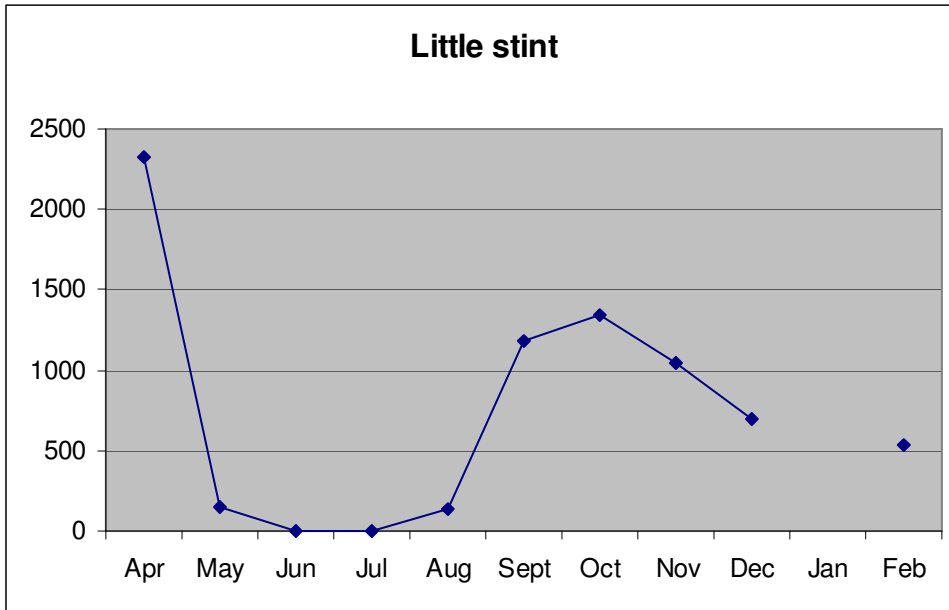
A typical pattern for a Palaearctic species – though again, the Feb count is strangely low. The peak in September may well be passage migrants on their way further south.

Spur-winged Plover *Vanellus spinosus*



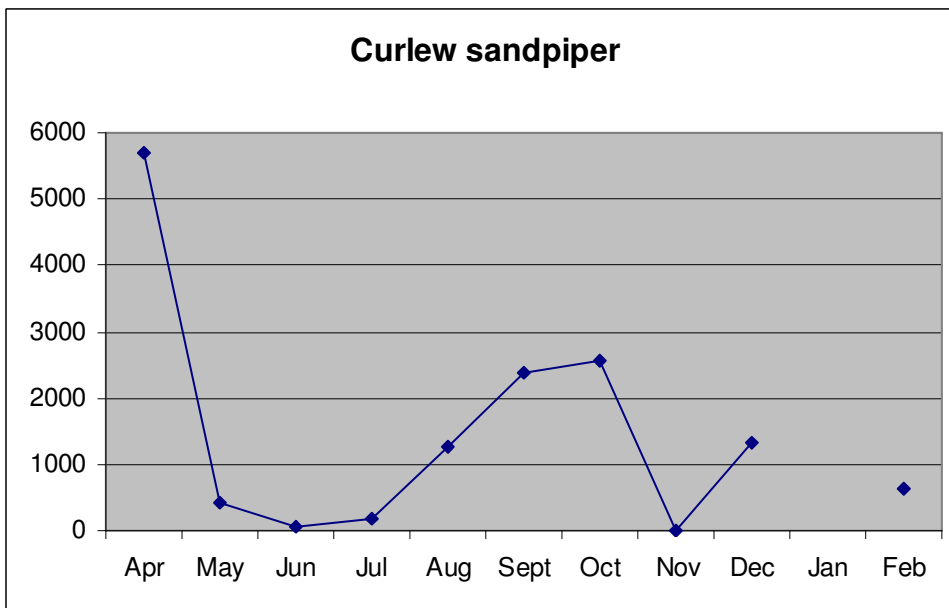
The species even though with some fluctuations during the year, due to local movements, it is clearly a resident species, even if probably breeding no nesting records are known for the area if not from Lewis & Pomeroy, 1989.

Little Stint *Calidris minuta*



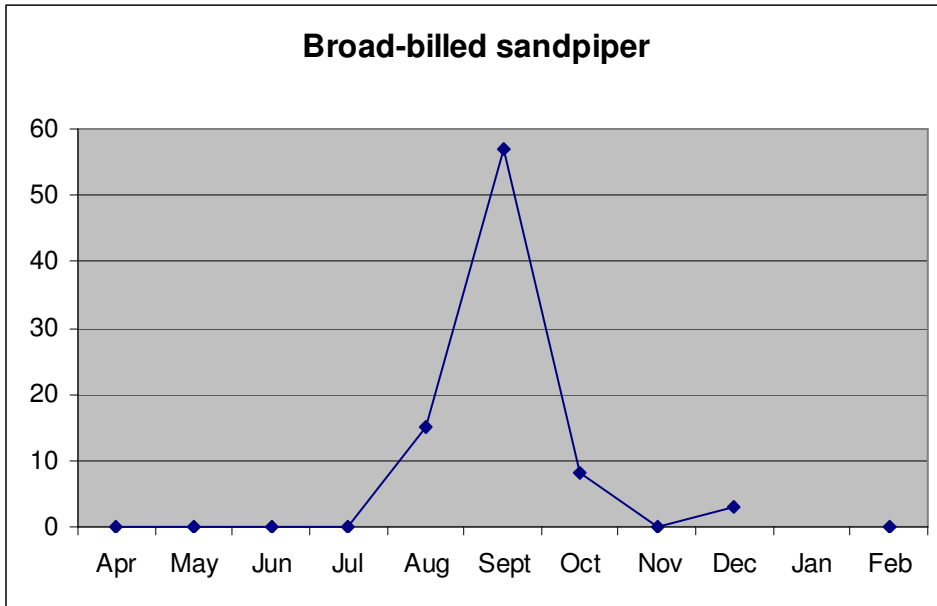
This pattern shows that of a passage species than that of a species that winters in large numbers on Sabaki River Mouth. The peak in April and October would be birds passing through on their way from or to more southerly wintering grounds.

Curlew Sandpiper *Calidris ferruginea*



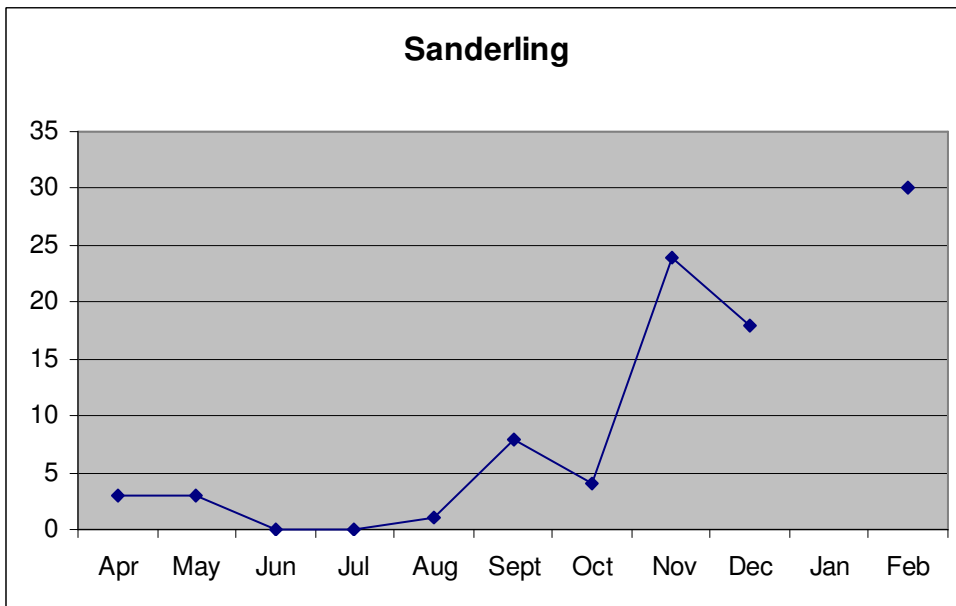
A very similar pattern to the preceding species. This would also appear to be more of a passage migrant at Sabaki than a winterer.

Broad-billed Sandpiper *Limicola falcinellus*



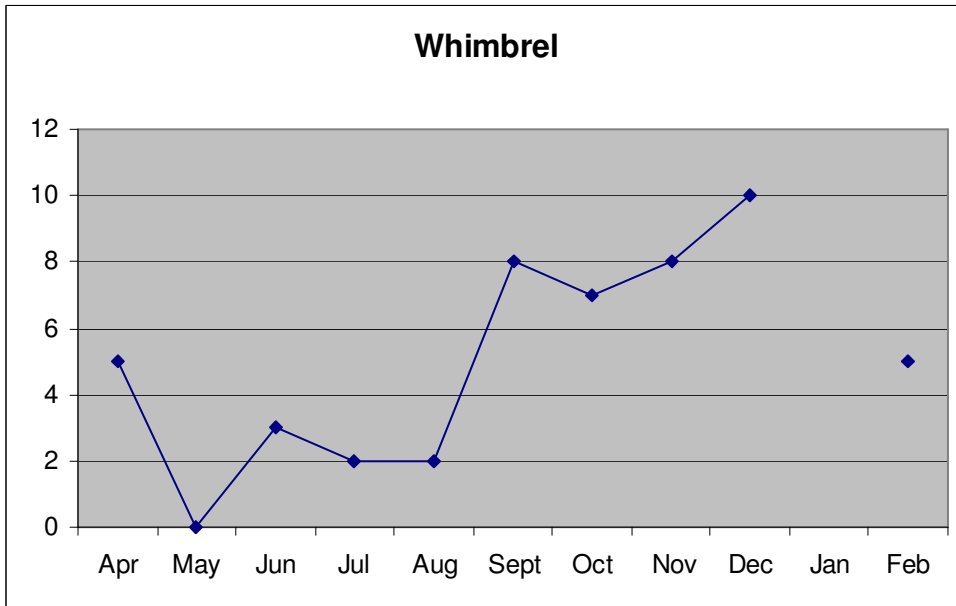
A far rarer species than the other Calidrids regularly recorded at Sabaki. This graph again shows this species to be probably more of a passage migrant than a winterer. Where these birds then spend the northern winter is as yet unknown.

Sanderling *Calidris alba*



This species is particularly linked to the sandy beach habitat and shows a clear wintering pattern.

Whimbrel *Numenius phaeopus*

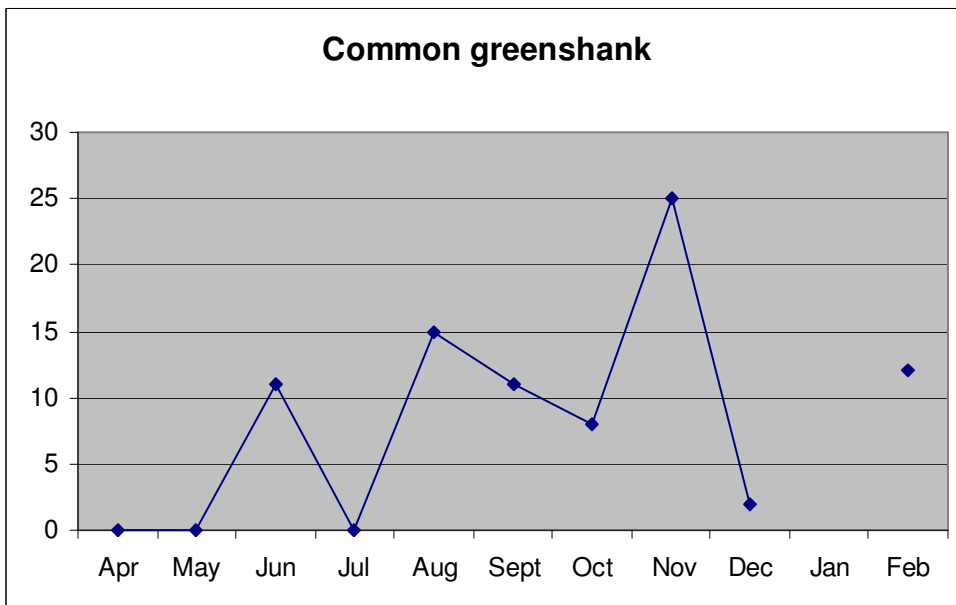


This large Palaearctic migrant wader appears to have a small non-breeding population that stays around during the northern breeding season. Numbers then build up to a regular wintering population.

Eurasian Curlew *Numenius arquata*

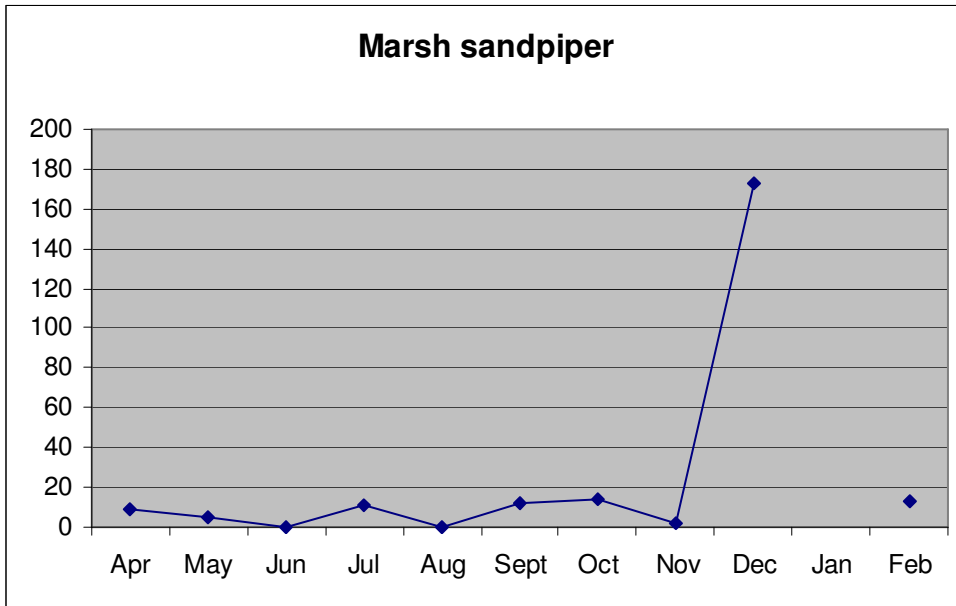
This species is not common at Sabaki River Mouth (a maximum of 4 individuals) preferring the sandy habitat of Mida Creek where 70-80 birds regularly occur.

Common Greenshank *Tringa nebularia*



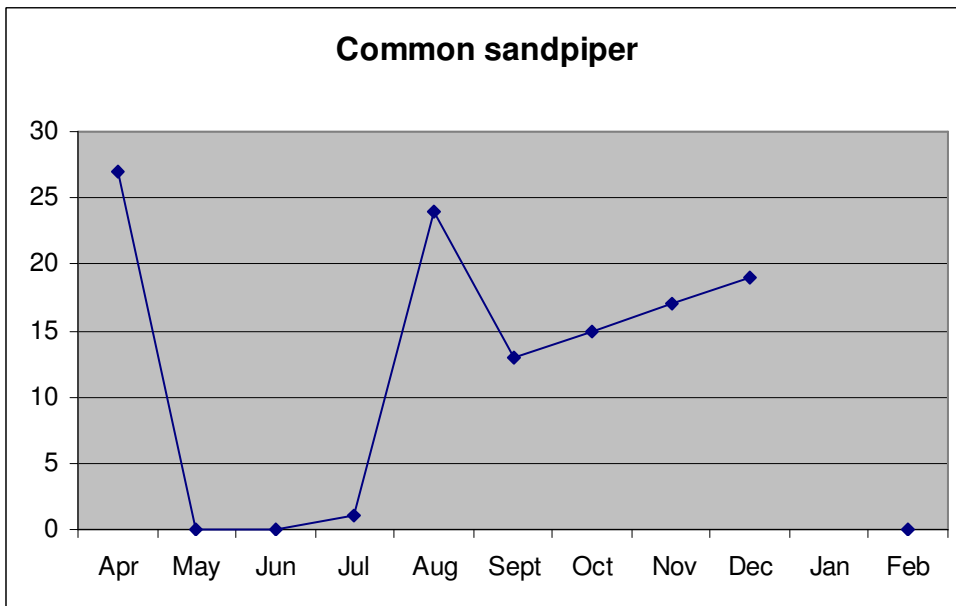
The data from this study would suggest the species is a passage migrant on the southward migration in August – November. Lower numbers spend the northern winter on the estuary and it is possible in the northward migration (April / May) that birds simply over fly the estuary heading for their breeding grounds.

Marsh Sandpiper *Tringa stagnatilis*



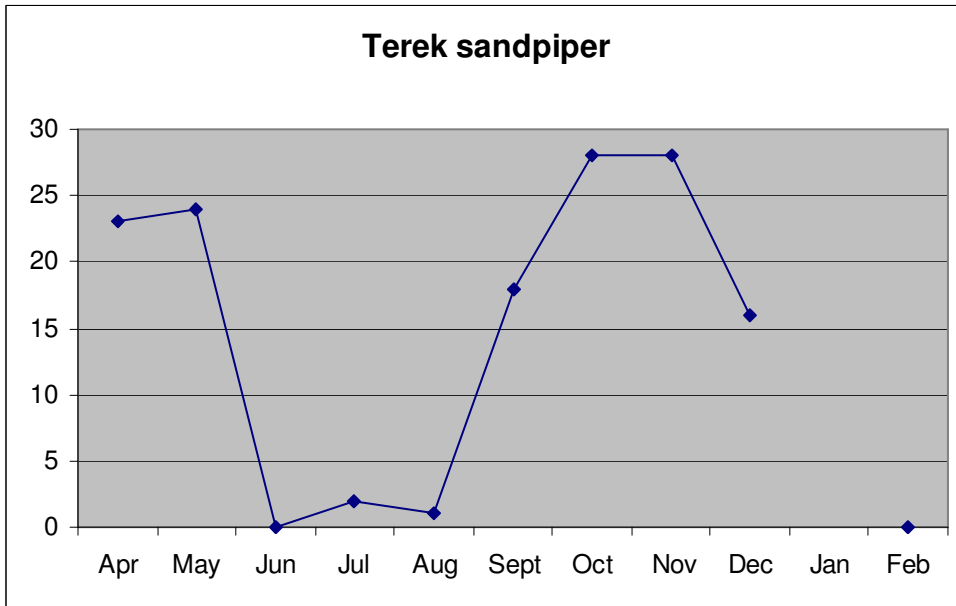
Recorded in very low numbers through the year, there is a sudden peak in December (and other January counts show high numbers) suggesting this species arrives on the estuary during the heart of the northern winter – perhaps conditions become excellent for it at this time – further studies are needed to understand this pattern.

Common Sandpiper *Actitis hypoleucos*



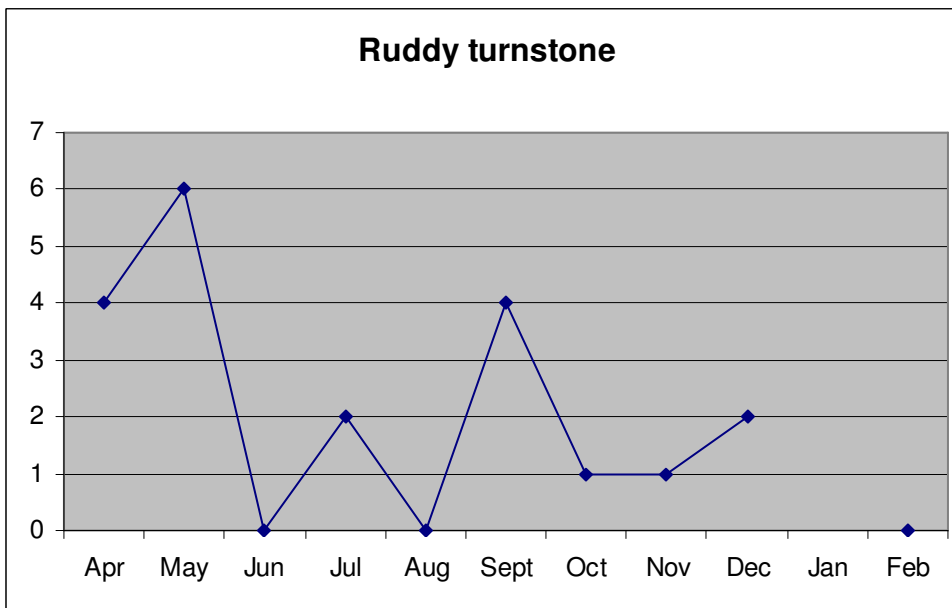
The graph shows the pattern of a passage bird with peaks during the migration period of April and August / September. The low count in February is again strange and probably due to local conditions.

Terek Sandpiper *Xenus cinereus*



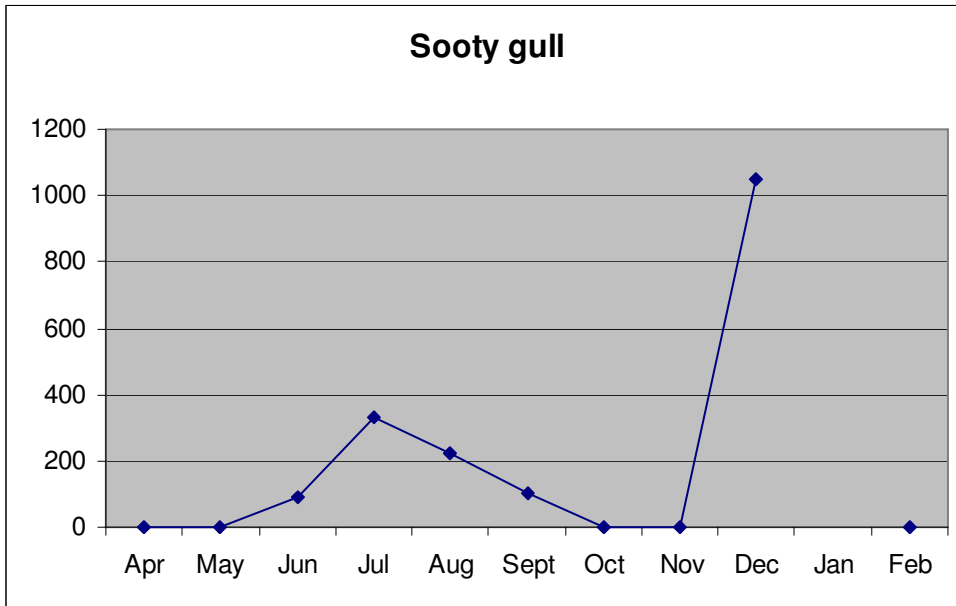
As for the preceding species, the Terek Sandpiper appears to use Sabaki more as a stop-over site than a wintering ground with high peaks in numbers in Oct / Nov and Apr / May.

Ruddy Turnstone *Arenaria interpres*



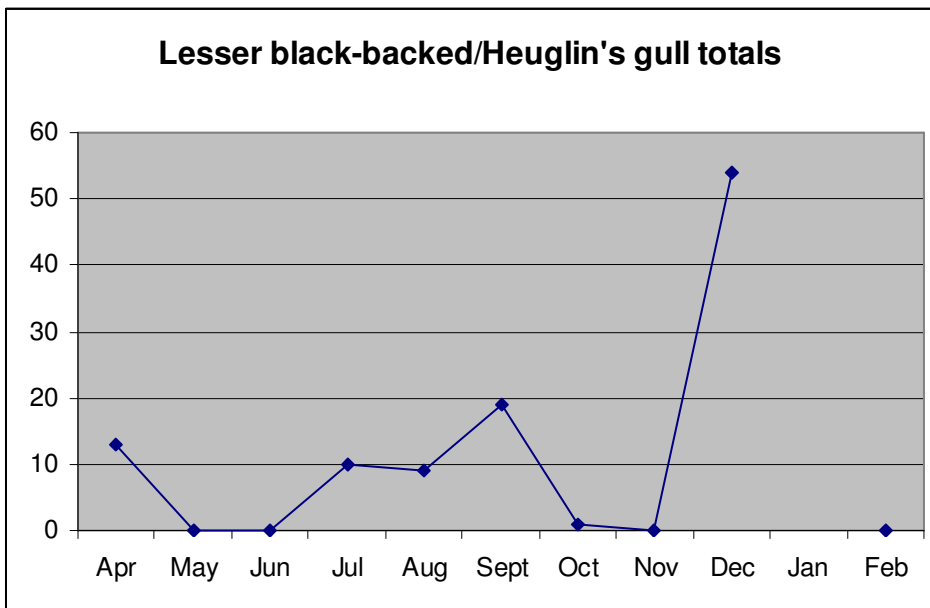
Not a numerous species at Sabaki preferring the more rocky habitats along the beach lines at other locations on the coast. The pattern here does seem to suggest a more "passage migration" use of the river mouth than a wintering species.

Sooty Gull *Larus hemprichii*



This is not a Palearctic species as it breeds on islands off the north Kenya coast (near Lamu) and Somalia into the Red Sea. There is a peak in numbers in July and a high peak in December.

Lesser Black-backed Gull / Heuglin's Gull *Larus fuscus* / *L. heuglini*



Since Heuglin's and Lesser Black-backed Gulls can be difficult to tell at a distance, particularly for the (more numerous) juveniles, the two species have been lumped for this interpretation. Numbers fluctuate quite a lot though it would seem like there is a passage of bird in September with larger numbers of wintering birds.

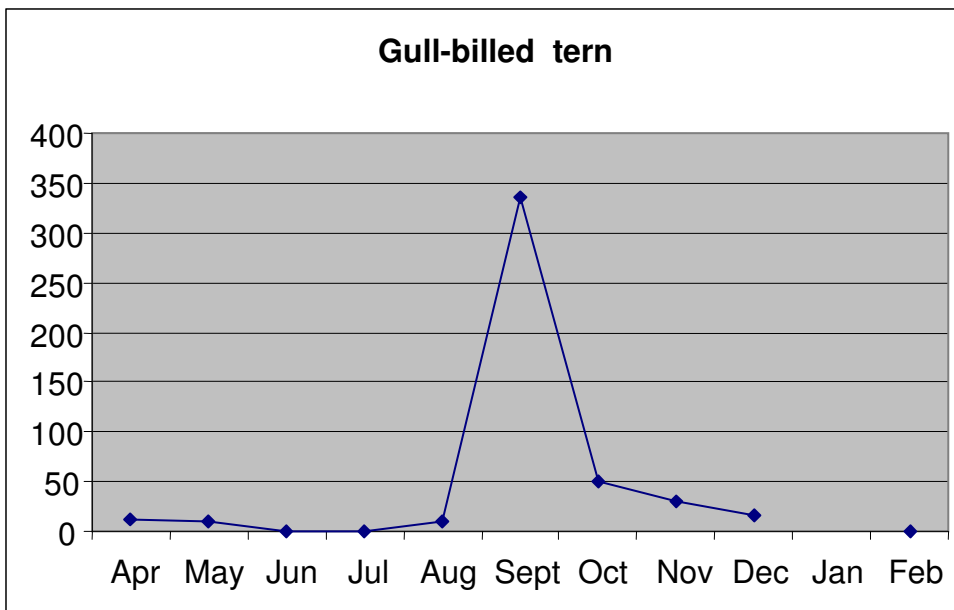
Terns

Other than perhaps Gull-billed Tern and small numbers of White-winged Black Tern, the Sabaki River Mouth is used mainly as a roost site for the various species of terns found there. These data show population fluctuations, but don't actually give a true idea of the size of it; much bigger numbers were recorded during the year in separate counts and on the southern bank. Night-time ringing of birds in January / February revealed something that was previously unknown – a vast roost of terns and gulls numbering up to an estimated 70-80,000 birds!

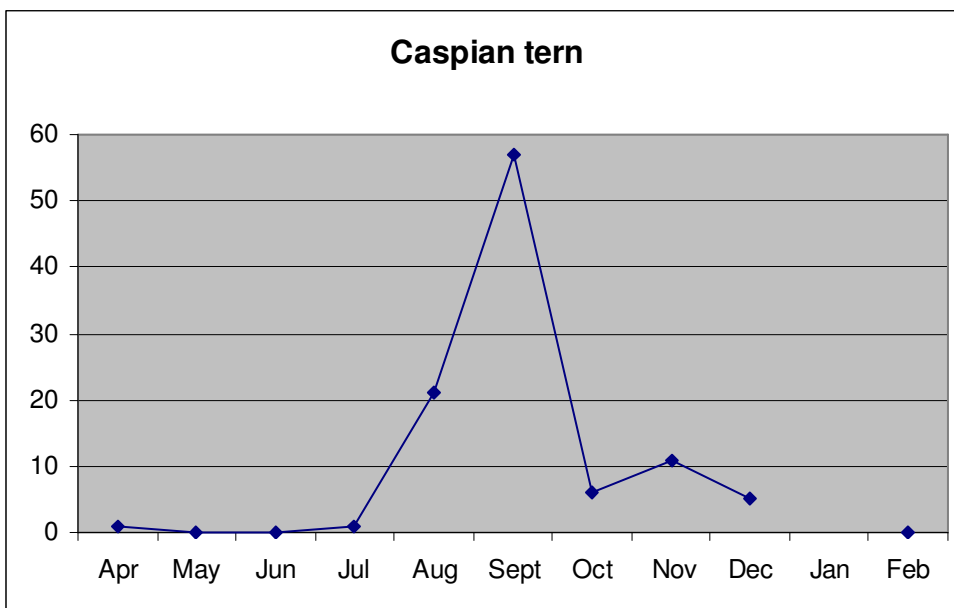
The following graphs show low tide roosting numbers with a particular peak for Gull-billed, Caspian in September and for Lesser Crested Terns a month earlier in August that are expected from Palaearctic migrants.

More regular and specific counts are needed of the terns when they are roosting to be able to get proper data on movements.

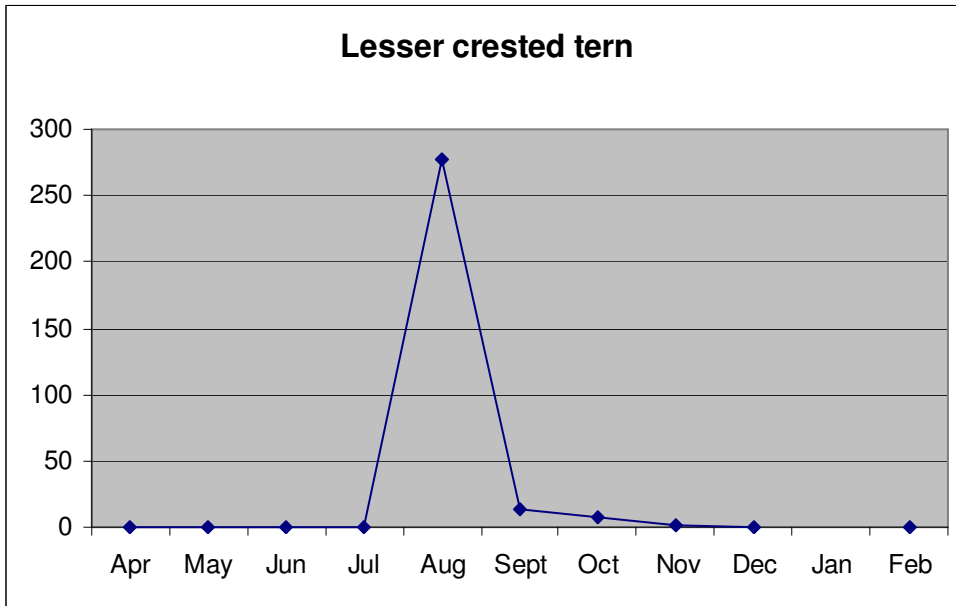
Gull-billed Tern *Gelochelidon nilotica*



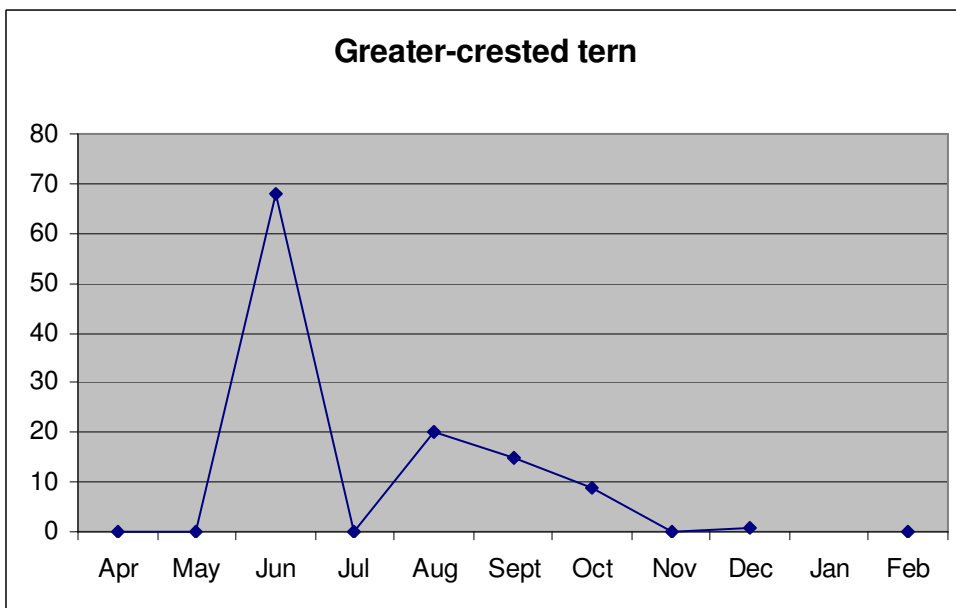
Caspian Tern *Sterna caspia*



Lesser Crested Tern *Sterna bengalensis*

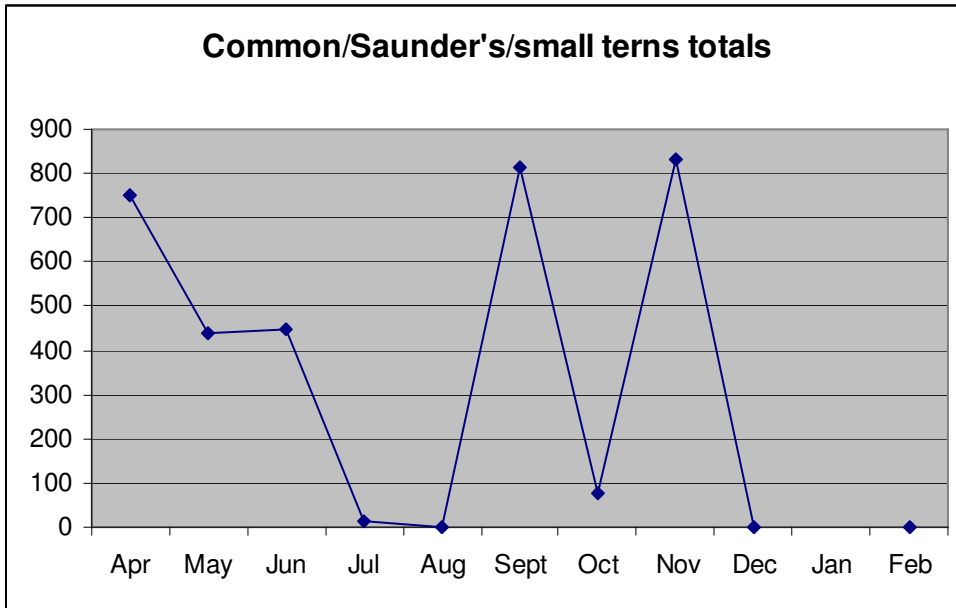


Greater Crested Tern *Sterna bergii*



Whilst known as a Palaearctic migrant, this species has a high peak in June when it should be breeding. Presumably these birds were young non-breeders that have stayed on non-breeding grounds rather than undergo a strenuous journey to the north for no particular reason. A peak in August and low numbers in the northern winter months suggests the species may be more of a passage bird than a winterer.

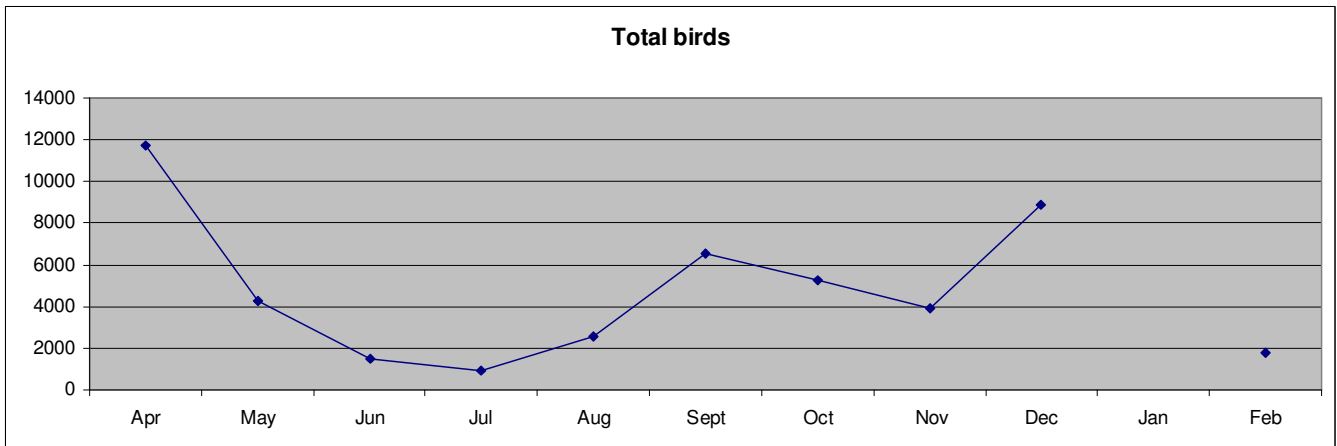
Small terns (mostly Common Tern *Sterna hirundo*, Saunder's Tern *Sterna saundersi*)



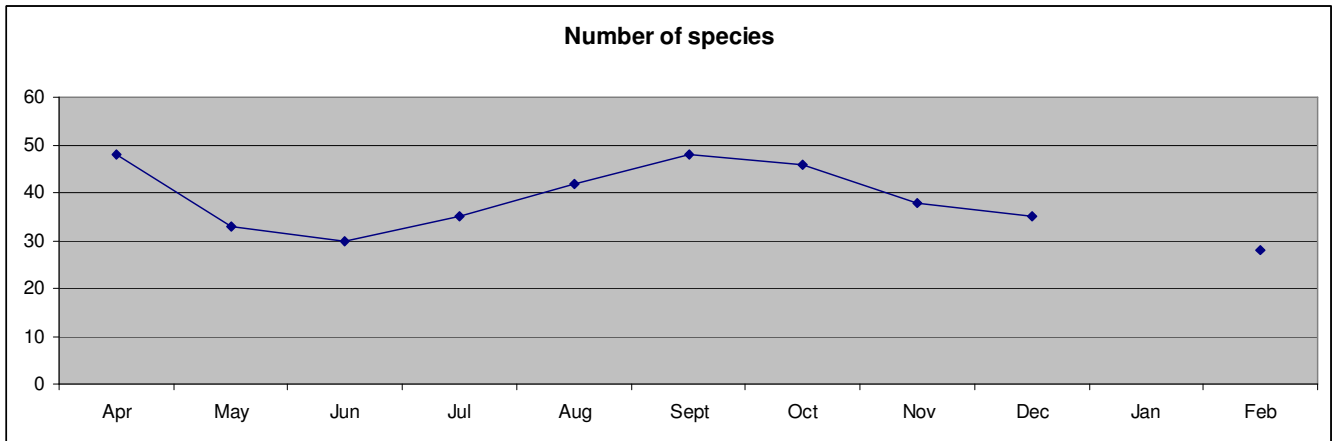
Abundant Palaearctic visitors; the chart shows a clear trend even though it is not clear why so few were counted in October; this might be caused by casual movements that cannot be considered by an highly standardized method. The majority of birds counted (and caught) during night-time ringing operations on the river mouth were Saunder's Tern. It would appear that day-time counts miss many thousands of birds that are presumably feeding out at sea in the day.

Total Birds

Considering the total number of birds using the estuary during the counts reveals the clear importance of the site for Palaearctic migrants either as a stop over and feeding site (indicated by the peak in September and April) or as a wintering site (peaking in December).



This trend is confirmed by the following chart that shows how the number of species varies during the year, clearly suggesting that Palaearctic summer and autumn are more important than winter.



Follow up surveys to repeat the above would be extremely valuable in confirming the movements of birds and identifying what periods of the year the estuary is of most importance for each species.

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